ONTARIO

PEST MANAGEMENT

RESEARCH & SERVICES COMMITTEE

1999 ANNUAL REPORT
TO

ONTARIO AGRICULTURAL SERVICES

COORDINATING COMMITTEE

JANUARY 14, 2000

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1. Executive Summary

The Ontario Pest Management Research & Services Committee (OPMRSC) met for the first time under the new OASCC mandate to consider cross commodity pest management issues. Issues identified by the technical working groups were considered along with those forwarded from the Ontario Horticultural Crops Research and Services Committee and the Ontario Field Crops Research and Services Committee. Since this is the first year of reporting within the new system, there are still some changes and adjustments to be made to provide greater efficiencies and to ease communication.

Crop protection issues affect both the horticulture and field crop industries, but it is not surprising that the approaches to solving the problems differ, considering the different production practices and value per acre of the commodities. Many of the field crop issues focus on the need for plant breeding and selection for pest resistance, while the issues affecting the production of horticultural crops revolve around access to crop protection materials, including biological controls.

Four recommendations were formulated; the first two directly address the issue of access to pesticides through harmonization and Minor Use registrations, and concern that materials will be lost or unavailable because of the American Food Quality Protection Act (FQPA) and the introduction of the requirement for Good Laboratory Practices for Minor Use residue trials.

The third recommendation, "the need for effective IPM programs and effective IPM research" incorporates the needs of both the field crops and horticultural crops industries. Finally, the fourth recommendation looks at a detrimental side effect of FQPA, slow Minor Use registrations and the lack of harmonization. Differences in the pesticide registration systems and accompanying legislation can result in non-tariff trade barriers that reduce the competitiveness of different sectors of the industry.

2. Introduction

The Ontario Pest Management Research & Services Committee (OPMRSC) is one of nine committees (Animal, Field Crops, Horticultural Crops, Food Processing, Rural Development, Agriculture and Food Engineering, Agricultural Economics, Pest Management, Soil Water and Air) reporting to the Ontario Agricultural Services Co-ordinating Committee (OASCC) .

As a result of the restructuring of OASCC during 1999, this committee has several functions.
These are:

1. To consider all cross commodity pest management issues identified by The Ontario Horticultural Crops Research & Services Committee, and the Ontario Field Crops Research & Services Committee and by the Technical Working Groups that report to the OPMRSC (i.e. The Ontario Weeds Committee, and the working groups formerly part of the Ontario Crop Protection Committee).

2. Publications: The crop protection portions of OMAFRA recommendations and publications are reviewed annually by the Technical Working Groups that report to the OPMRSC.

3. To provide leadership, direction and review for the Food Systems 2002 research funds.

The Technical Working Groups which now report to OPMRSC instead of the Ontario Crop Protection Committee: Fruit, Tobacco, Vegetables, Field Crops, Greenhouse Vegetables, Greenhouse Floriculture, Ornamentals and Turf, and Ginseng.

3. Mandate

The new mandate of the OPMRSC is to review and consider pest management and crop protection issues that may affect several different commodities within Ontario plant agriculture. The committee then identifies issues and formulates recommendations to address deficiencies and needs within the system. As part of this mandate, the committee provides leadership, direction and review for the Food Systems 2002 research funds, based on priorities identified within the commodity groups. A third activity is the coordination of the Ontario Crop Protection meetings , where industry representatives and researchers can share information on crop protection issues.

The committee also accepts the reports of committees that review and update the OMAFRA crop production publications.

4. Industry Scan

Weed control research in Ontario in 1999 was focussed on the development of weed control strategies for genetically modified crops such as Roundup Ready soybeans and corn, and Liberty-Link corn. Several studies included the influence of row width and seeding populations on weed control and crop yields of corn and soybeans treated with either Roundup or Liberty. In addition, studies stressed the importance of timing of weed control relative to the critical period and the role of residual herbicides.

This technology (notably Roundup Ready soybeans) was adopted eagerly by Ontario soybean growers. Roundup Ready soybeans captured approximately 20% of the Ontario soybean acreage. Over the past year however, genetically modified crops have come under political pressure as a result of consumer campaigns questioning food safety issues of this technology. The role of biotechnology for food production is a critical issue that must be explored if this technology is to contribute to Ontario farmers.

Research has continued to focus on the development of integrated weed management systems for Ontario horticultural and field crop industries. New products receiving registration and subsequent scheduling for Ontario included Distinct, Reliance STS, and Viper. Eleven minor use registrations were received for fruit and vegetable crops through the URMUR (User Requested Minor Use Registration) and URMULE programs. These programs for herbicide registration on minor crops have been very successful in providing new tools for weed management to Ontario fruit and vegetable growers. New herbicides tested included: Mon 78045, Mon 8783, EXP31130 + atrazine and ZA 1296.

Research continues on the development of integrated weed management systems, on the biology and control of annual and perennial weeds which are of particular concern to growers utilizing conservation tillage practices. HADSS, a computerized decision support system for herbicide selection was field tested for Ontario conditions. Results were promising and field testing and development will continue. Research continues to focus on the development of weed seedling emergence models, weed and crop competition models and models of population dynamics. These models are being developed to provide decision support systems for Ontario producers. Other research on integrated weed management was focussed on: variety sensitivity to selected herbicides, the effect of crop rotation and management practices such as narrow row corn on weed shifts, competitive ability and resulting seed bank dynamics.

***Emerging Issues*:**

The role of Good Laboratory Practices (GLP) is becoming more significant in our research programs. Several research stations are being positioned to facilitate the implementation of GLP practices for soil and plant herbicide residues. The cost of this new practice was audited at the Simcoe Research Station this past summer. Discussions will continue on the role of GLP practices within our research programs.

Biotechnology will continue to have a major influence on the future direction of weed science research in Ontario. The first wave of new technology has been focussed on herbicide resistance e.g. Roundup Ready technology. Concerns have been expressed as to the over exposure of this unique herbicide leading to the development of herbicide resistance within the weed population, potential for cross resistance to native plants, and weed population shifts.

Publication 75 is under review by the Ontario Weed Committee. The objective of this review process is to enhance readership, user friendliness and to increase the information available to Ontario producers. This work is being done in two phases. The first phase of this revision has now been completed . The weed rating tables have been redesigned to increase the number of weed species. The control ratings will be changed from letters to numbers. Control of weed species according to the herbicide label will be highlighted in black. The second phase of reviewing the text within each section has also been initiated . A section on Integrated weed management has been added, remarks section has been replaced with `Precautions `, the weeds controlled column eliminated , and the herbicides have been arranged in alphabetical order under the headings of "Grass Herbicides". "Broadleaf Herbicides" and "Grass and Broadleaf Herbicides". The new book design will be in print for the year 2000.

On the national and international level, efforts are being made to harmonize the registration process both among provinces and between the United States and Canada. The scheduling of herbicides is likely in the future to be done at the national rather than at the provincial level.

5. Recommendatios Arising from Gaps and Barriers

OPMRSC RECOMMENDATION # 1

i. Target Agencies
- the University of Guelph
- Agriculture and Agri-Food Canada

ii. Title:
Public Sector Support for Minor Use Registrations Including Good Laboratory Practices (GLP) Residue Trials

iii. Details:.
The accreditation of University of Guelph and Agriculture & Agri-Food Canada personnel and field station sites as GLP compliant is essential for the continued support of Minor Use registrations in Ontario. GLP certification is now required for residue trials under the Minor Use (URMULE and URMUR) system. Without access to GLP compliant research field sites and personnel, minor use work will be seriously impeded.

An on-going process of accreditation, training, and auditing is required to maintain GLP certification. The necessary components include:
a) one-time funding to bring the facilities up to GLP standards
b) an individual within the University (or within the Province) as Study Director to perform the audits
c) increased funding to account for the increased supplies and labour required for these trials, (PMRA has agreed to some funding increases) and
d) GLP accreditation of the University of Guelph Laboratory Services Division, so residue analyses can be conducted in Ontario.

iv. Background:
Minor Use Registrations under new PMRA regulations (GLP/GFP) will require site certification. This will increase costs for residue trials and analyses. While some private agencies already do work to GLP standards, the costs are very high and the facilities do not exist to conduct the number of trials each year that are needed to address the Minor Use priorities of Ontario growers.

OPMRSC RECOMMENDATION #2

i. Target Agencies
- Health Canada
- Agriculture and Agri-Food Canada

ii. Title:
Improve Rgistration Process for Crop Protection Materials, including Biologicals and Biorationals.

iii. Details:
Changes are needed to the current registration system to move closer to harmonization of access to crop protection materials with the United States, including increasing the number of products that are jointly registered. A system of Special Exemption for least toxic products (similar to that of the EPA) would increase the availability of IPM compatible materials, and the system for the registration of biological controls must undergo significant changes to make these materials available to growers. Adequate funding for the URMULE and URMUR programs is a requirement.

iv. Background:
Ontario growers remain at a competitive disadvantage in the world market as a result of limited access to crop protection materials, including new chemistry, biological controls and biorational, or least toxic products. Ontario growers often must use older, less environmentally friendly products, because new materials are not registered. The implementation of the Food Quality Protection Act in the United States will mean that some of the older materials will no longer be available, or that produce treated with these products cannot be exported to the U.S. While American growers have access to new products and new chemistry to replace those materials that are lost, Ontario growers often do not have access to these, or must wait years before these products are registered. In some cases, the costs of a Canadian registration are such that it is not economically feasible.

While improvements have been made to the system of registering pesticides, and the URMULE system is gradually becoming faster, significant barriers still exist.

OPMRSC RECOMMENDATION # 3

i. Target Agencies:
- Ontario Ministry of Agriculture, Food and Rural Affairs
- University of Guelph
- Agriculture and Agri-Food Canada

ii. Title:
Support for Integreated Pest Management Programs in Ontario

iii. Details:
Integrated pest management programs in Ontario have been successful in reducing pesticide use and improving environmental quality and food safety. Because pest complexes change, as do production systems and cultivars, continuous monitoring and

adaptation of existing systems are needed. Research, field evaluation and delivery for new programs will also benefit the agricultural industry. Support for field evaluation and delivery must be ongoing, and funding of IPM research must continue. Essential studies include the biology of pests (insects , diseases, nematodes and weeds), epidemiology, and breeding and screening for resistance to pests.

iv. Background:

OMAFRA recently announced dramatic cuts to the field staff, including those who played an important role in the support of pest management programs on many crops. There are a number of examples where private industry is uninterested or unprepared to offer a replacement service, or where growers wish to maintain more control over the programs that operate in their areas. Several programs are in danger of collapsing, which would mean that growers would have to resort to more calendar-based pesticide application.

Funding for research on integrated pest management and integrated crop management has also decreased recently. The funds available for FoodSystems 2002, which directly addresses IPM issues, have decreased from $800,000 to $200,000 over the past four years. Continued support for this research is needed within the University of Guelph and the AAFC research stations.

OPMRSC RECOMMENDATION #4

i. Target Agencies:

- Agriculture and Agri-Food Canada
- Pest Management Regulatory Agency
- Canadian Food Inspection Agency

ii. Title

Address Non-tariff Ttrade Barriers Arising from Pesticide Use and Registration Issues

iii. Details:

The United States has a zero tolerance for residues of pesticides on imported crops, while Canada has a tolerance of 0.1ppm of residue for pesticides not registered in this country. This puts Ontario growers at a disadvantage when they must rely on products not registered in the U.S., while growers in the United States or elsewhere can use new materials or those not registered in Canada, receive the production advantage, and still export the treated product to Canada. The solution is to quickly move to harmonization of pesticide registration with the United States, and to prevent the entry of produce or products containing residues of pesticides not registered in Canada.

iv. Background:

This issue affects many agricultural industries, where Ontario growers are competing with imported product for some ,or all, of the year. The issue will very likely worsen with the implementation of FQPA in the United States, as older pesticides are prohibited from use.

One example occurs in the Ontario ginseng industry, where the fungicide , PCNB, sold as Quintozene, is essential for the control of the soil borne fungus, *Rhizoctonia solani*, which attacks young ginseng roots. The use of this material has become a non-tariff trade barrier, because treated roots have very low, but detectable residues, and are not allowed into the United States. Registration of a suitable replacement in Canada has been hindered because the PMRA will not accept the data packages accepted by the EPA in the United States. However, ginseng grown in the U.S., with other pesticides, can be imported into Canada.

Appendix i. Report of the Ontario Weed Committee 1999

***State of the Industry*:**

Weed control research in Ontario in 1999 was focussed on the development of weed control strategies for genetically modified crops such as Roundup Ready soybeans and corn, and Liberty-Link corn. Several studies included the influence of row width and seeding populations on weed control and crop yields of corn and soybeans treated with either Roundup or Liberty. In addition, studies stressed the importance of timing of weed control relative to the critical period and the role of residual herbicides. This technology notably Roundup Ready soybeans were adopted eagerly by Ontario soybean growers. Roundup ready soybeans captured approximately 20% of the Ontario soybean acreage. Over the past year however, genetically modified crops have come under political pressure as a result of consumer campaigns questioning food safety issues of this technology. The role of biotechnology for food production is a critical issue that must be explored if this technology is to contribute to Ontario farmers.. Research has continued to focus on the development of integrated weed management systems for Ontario horticultural and field crop industries. New products receiving registration and subsequent scheduling for Ontario included Distinct, Reliance STS, and Viper. Eleven minor use registrations were received for fruit and vegetable crops through the URMUR and URMULE programs. These programs for herbicide registration on minor crops have been very successful in providing new tools for weed management to Ontario fruit and vegetable growers. New herbicides tested included: Mon 78045, Mon 8783, EXP31130 + atrazine and ZA 1296.

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Sub-Committee Activities:

1. W_ eed Resistance Sub-Committee: members of this committee are preparing a fact sheet on herbicide resistance. As well, at numerous extension meetings on weed control the issue of weed resistance is discussed. This sub-committee is responsible for the dissemination of research information on resistance.

2. Weed Specific Rate Sub-Committee: This subcommittee's mandate is to facilitate and encourage company, government, farmer partnerships in the development and dissemination of weed specific rate information for weed management in field crops. The objective is to obtain information and support from government agencies and herbicide companies for weed specific labelling. No specific action was taken in 1999.

2.R esearch Priorities Sub-Committee: The Research Priorities sub-committee of the Ontario Weed Committee has two main functions: (1) the drafting of weed research and service priorities for review, modification and adoption by the OWC, and (2) the compilation of priorities for herbicide efficacy studies leading to registration of minor use products under the URMULE and URMUR programs. Research and service priorities were developed through

consultation with growers' organizations, industry representatives, researchers and extension personnel. Priorities were categorized according to whether they met Food System 2002 objectives, and whether the research was short or long-term in nature. The priorities were presented, discussed and accepted at the November 9, 1999 meeting of the Ontario Weed Committee.

ONTARIO WEED COMMITTEE RESEARCH PRIORITIES, 1999

FS2002 Research Priorities

Priority	Topic
H-1	Develop and evaluate site-specific methods of weed management as a means of reducing weed control costs and/or improving efficiency by targeting only those areas of a field where weed problems occur.
H-2	Herbicide efficacy and residue studies leading to registration of minor use products in horticultural crops, or for problem weeds not currently on product labels in field crops, under the URMULE and URMUR programs.
H-3	Develop improved methods for the rapid, efficient detection of herbicide residues in relation to: (I) off-site contamination, e.g. drift, run-off, leaching, (ii) herbicide carry-over and crop rotation, and (iii) applicator, grower, bystander exposure to dislodgeable foliar residues on plants.
H-4	Determine weed specific (biologically effective) herbicide rates and critical factors affecting their performance in field and horticultural crops. This information will help growers minimize herbicide use by adjusting the dose to the particular weed problem. It includes the effect of sub-lethal doses on weed seed production, viability and germination.

Priority	Topic
M-5	Develop integrated weed management systems for field and horticultural crops, including adjacent field margins, roadsides and rights of way.
M-6	Evaluate and monitor the ecological and environmental impact of herbicide tolerant crops, including shifts in weed populations and development of herbicide resistant weed biotypes.
M-7	Develop a comprehensive herbicide resistance management strategy to prevent and reduce herbicide resistance problems in Ontario, including guidelines on the use of tank-mixtures and rotation of herbicide groups.
M-8	Evaluate advanced sprayer technologies which have the potential to reduce herbicide rates, spray drift, spray volume and effects on non-target organisms, to meet the needs of custom applicators and growers.
L-9	Establish economic thresholds for major weeds in field and vegetable crops.
L-10	Determine the most effective timing and method of mechanical weed control for particular weed species and growth stages. This information is needed for resistance management strategies as well as integrated control programs.
L-11	Evaluate effectiveness of biological control agents, including seed predators, to replace or reduce herbicide use in crop and non-crop areas.
L-12	Evaluate effectiveness of new herbicides which are active at low rates.

Other Research Priorities (not eligible for FS2002 funding)

1	Develop management strategies for problem weeds in reduced tillage systems, e.g. wild carrot, Canada fleabane, horsetail, swamp smartweed, and in muck soils, e.g. groundsel and yellow nutsedge.
2	Re-cropping or plant-back studies to determine crop rotation restrictions, particularly for horticultural crops following application of some of the newer herbicides.
3	Basic research on weed population dynamics in the context of crop production systems under both conventional and conservation tillage practices.

4 Basic research on the biology of problem weeds associated with conservation tillage, and on weed seed production and survival.

5 Develop predictive models of weed seedling emergence, weed-crop competition, and weed population dynamics.

6 Assess interactions of weeds and weed control methods with other pest management problems, e.g. insects and diseases in horticultural crops.

7 Investigate mechanisms of resistance to group II herbicides, and identify biological differences between resistant and susceptible populations which may affect the spread, persistence or control of resistant weeds.

Appendix ii. Committee Membership

ORGANIZATION	NAME	CONTACT INFORMATION
Muck Research Staion, University of Guelph	Mary Ruth McDonald - Chair	RR 1 Kettleby, Ont L0G 1J0; 905-775-3783 or 519-824-4120 ex. 2791; Fax: 905-775-4546 mrmcdona@evbhort.uoguelph.ca
Ontario Fruit and Vegetable Growers	Craig Hunter	355 Elmira Road, Unit 103 Guelph Ont N1K 1S5 519-763-6160; Fax: 519-763-6604 research @in.on.ca
Ag Care	Jim Fischer	RR 3 Walkerton, Ont N0G 2V0 519-881-2975 jfischer@bmts.com
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Plant Agriculture	Clarence Swanton	University of Guelph., Guelph, Ont N1G 2W1 519-824-4120 ex. 2512; Fax: 519-763-8933 cswanton@plant.uoguelph.ca
	Jeff Wison	RR. 2 Orton, Ont L0N 1N0; 519-855-6519; Fax: 519-855-6061
Tender Fruit Board and Apple Commission	Wayne Roberts	Box 100 Vineland Station, Ont L0R 2E0; 905-688-0990; Fax: 905-688-5915 grapeont@vaxxine.com

Appendix iii . Terms of Reference

Main Committee

To establish priorities for pest management research and service programs for broad issues across commodities.

To assess the requirements for pest management research and services.

To asssess progress in pest management research.

To provide the OASCC with information detailing the needs for pest management research and services, providing where possible data re:

cost-benefit analysis
assessment of resources (personnel, facilities, financial)
Most suitable location for investigations

To provide a forum for agri-businessand grower associations to communicate pest management issues and priorities.

To oversee the activities of the two Technical Working Groups:

1. Ontario Weed Committee
2. Ontario Crop Protection Committee

Appendix iv. Report of Action Taken on Previous Recommendations

Recommendation 1:
That the registration process for Biological Pest Control products be revoked and the USA E.P.A.'s requriements be accepted and consideration of identical registration submissions for such products that have been submitted and approved in the USA.

Background:
In past years the Berry Growers supported research funding from OMAFRA to Dr. John Sutton, U of G, to develop a biological pesticide for control of Botrytis grey mould. This work was highly successful, and has now been commercialized elsewhere, but it cannot be used in Canada, even though the research was done here!

Another biological product was recently submitted for registration as a URMUR (User Requested Minor Use Registration), with the US registration package that allowed its US registration. This has been rejected due to "data deficiencies". Since the product qualifies as a "reduced risk" compound in the US, several extra data requirments were waived there, and thus, not in the Canadian submission package. It seems that no one in Ottawa was prepared to treat the package "in a harmonized way" similar to that of the US E.P.A. As a result, another company has been "turned off" and is unlikely to co-operate again.

Since many of these new products get commercialized by small companies, they do not have the resources to meet data requirements beyond those of the US. In addition, they do not have the staff or time to find their way around the 'Bureaucracy of Canadian Registration'. As a result, Canada, and Canadian farmers, are denied the opportunity to use these products. If one had faith that the registration process will improve, then one would continue to support the research needed on this technology. However, the Berry Growers are now saying in a substantive way, they have lost faith.

The OPMRSC is prepared to work with any agency, or any organization to resolve the issue. In the spirit of harmonization, in recognition of the value these products promise, and for the good of the Canadian Registration Systems' reputation, we urge that these requests be considered, and approved in an expedited manner.

Response:
ARIO continues to recognize the importance of improving the registration process for pest control products in Canada. They encourage the industry to seek to resolve the current difficulties with the registration process for biological and other pest control products.

Recommendation 2:
That ARIO increase the funding for Integrated Pest Manangement.

Response
Pest management research which addresses the priorities identified by the committee continues to be supported through Food Systems 2002 and the Plants Research program of the Enhanced Partnership agreement. Pest management research was also eligible for support in this year's Special Research Fund call for proposals.

The limited financial and human resources available dictate that not all priorities can be addressed simultaneously. In order for new priorities to be addressed or emphasis shifted, existing research must be scaled back or completed so that the resources can be reallocated.

A mechanism is being put in place to redirect resources within the Enhanced Partnership Agreement to high priority areas which are not currently being adequately addressed. Committees will need to identify areas which are the highest priority and also which areas of research can be reduced.